

DaimlerChrysler AG

Patent claims

- 5 1. A method for operating an internal combustion engine having a cylinder, a cylinder head in which at least one inlet valve and one outlet valve are arranged, a piston and a combustion chamber which is bounded between the cylinder head and the piston, in
10 which
- exhaust gas is retained in the combustion chamber and is compressed during a charge change,
 - a first fuel quantity being injected into the retained exhaust gas by means of direct fuel
15 injection, and
 - a second fuel quantity being subsequently fed to the combustion chamber so that a homogeneous fuel/air mixture is formed in the combustion chamber, characterized
- 20 - in that an auto-ignition time of the fuel/air mixture which is formed from the first and second fuel quantities is set as a function of a quantity ratio of the first fuel quantity to the second fuel quantity.
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2. The method as claimed in claim 1, characterized in that the quantity ratio of the first fuel quantity to the second fuel quantity is set to between 1:100 and 2:1, in particular between 1:20 and 2:1 or 1:5 and 1:3.
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3. The method as claimed in claim 1 or 2, characterized in that a center of gravity of the combustion is set by injecting a third fuel quantity, which is carried out after the second fuel quantity
35 ends and before a top dead center of the ignition.
4. The method as claimed in one of the preceding claims, characterized in that a period of combustion is

set as a function of the third fuel quantity and/or its injection time.

5. The method as claimed in one of the preceding
5 claims, characterized in that the first fuel quantity is between 0% and 30% of the total fuel quantity.

6. The method as claimed in one of the preceding
10 claims, characterized in that the second fuel quantity is between 40% and 100% of the total fuel quantity.

7. The method as claimed in one of the preceding
15 claims, characterized in that the third fuel quantity is between 0% and 30% of the total fuel quantity.

8. The method as claimed in one of the preceding
20 claims, characterized in that the first fuel quantity is injected into the exhaust gas which is retained in the combustion chamber during the expulsion stroke of the internal combustion engine after an outlet valve closes and 270° Ca before a top dead center of the ignition.

9. The method as claimed in one of the preceding
25 claims, characterized in that the first fuel quantity is input into the combustion chamber in a range between the closing of the outlet valve and a charge change dead point.

30 10. The method as claimed in one of the preceding claims, characterized in that the second fuel quantity is injected into the combustion chamber in a range between 300° Ca and 120° Ca before the top dead center of the ignition.